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MELSEC-F

USER'S MANUAL

FX2N-32DP-IF PROFIBUS-DP INTERFACE UNIT

FX2N

Foreword

- This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the FX2N-32DP-IF Profibus-DP Interface Unit. It should be read and understood before attempting to install or use the unit.
- Further information can be found in the FX2N Series and FX0/FX0N Series Hardware Manual, manual of special function blocks and manual of Profibus-DP master CPUs.
- If in doubt at any stage during the installation of the FX2N-32DP-IF Profibus-DP Interface Unit always consult a professional electrical engineer who is qualified and trained to the local and national standards.
- If in doubt the operation or use of the FX2N-32DP-IF Profibus-DP Interface Unit please consult the nearest Mitsubishi Electric distributor.
- This manual is subject to change without notice.

FX2N-32DP-IF PROFIBUS-DP INTERFACE UNIT

USER'S MANUAL

Manual number : JY992D79401
Manual revision : A
Date : April 1999

FAX BACK

Mitsubishi has a world wide reputation for its efforts in continually developing and pushing back the frontiers of industrial automation. What is sometimes overlooked by the user is the care and attention to detail that is taken with the documentation. However,to continue this process of improvement, the comments of the Mitsubishi users are always welcomed. This page has been designed for you,the reader,to fill in your comments and fax them back to us. We look forward to hearing from you.

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Thank you for taking the time to fill out this questionnaire. We hope you found both the product and this manual easy to use.

Guidelines for the Safety of the User and Protection of the FX2N-32DP-IF Profibus-DP Interface Unit.

This manual provides information for the use of the FX2N-32DP-IF Profibus-DP Interface Unit. The manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:

a) Any engineer who is responsible for the planning, design and construction of automatic equipment using the product associated with this manual should be of a competent nature, trained and qualified to the local and national standards required to fulfill that role. These engineers should be fully aware of all aspects of safety with regards to automated equipment.

b) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards required to fulfill that job. These engineers should also be trained in the use and maintenance of the completed product. This includes being completely familiar with all associated documentation for the said product. All maintenance should be carried out in accordance with established safety practices.

c) All operators of the completed equipment should be trained to use that product in a safe and coordinated manner in compliance to established safety practices. The operators should also be familiar with documentation which is connected with the actual operation of the completed equipment.

Note : the term 'completed equipment' refers to a third party constructed device which contains or uses the product associated with this manual.

Notes on the Symbology Used in this Manual

At various times through out this manual certain symbols will be used to highlight points of information which are intended to ensure the users personal safety and protect the integrity of equipment. Whenever any of the following symbols are encountered its associated note must be read and understood. Each of the symbols used will now be listed with a brief description of its meaning.

Hardware Warnings

1) Indicates that the identified danger **WILL** cause physical and property damage.

2) Indicates that the identified danger could **POSSIBLY** cause physical and property damage.

3) Indicates a point of further interest or further explanation.

Software Warnings

4) Indicates special care must be taken when using this element of software.

5) Indicates a special point which the user of the associate software element should be aware of.

6) Indicates a point of interest or further explanation.

- Under no circumstances will Mitsubishi Electric be liable responsible for any consequential damage that may arise as a result of the installation or use of this equipment.
- All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.
- Owing to the very great variety in possible application of this equipment, you must satisfy yourself as to its suitability for your specific application.

Table of Contents

1. Introduction

The FX_{2N}-32DP-IF Profibus-DP Interface Unit (hereafter called “32DP-IF”) can be used to connect extension blocks/units and special function blocks of FX_{2N}/FX_{0N} series directly to an existing Profibus-DP network.

The 32DP-IF provides an intelligent slave function for decentralized control applications. Digital and analog data from a Profibus-DP master CPU (hereafter called “DP-master”) can be sent and received to/from any of the supported I/O blocks and special function blocks.

1.1 Features of the 32DP-IF

Using the 32DP-IF extension blocks, units, special function blocks of FX_{2N}/FX_{0N} series can exchange data with any DP-master.

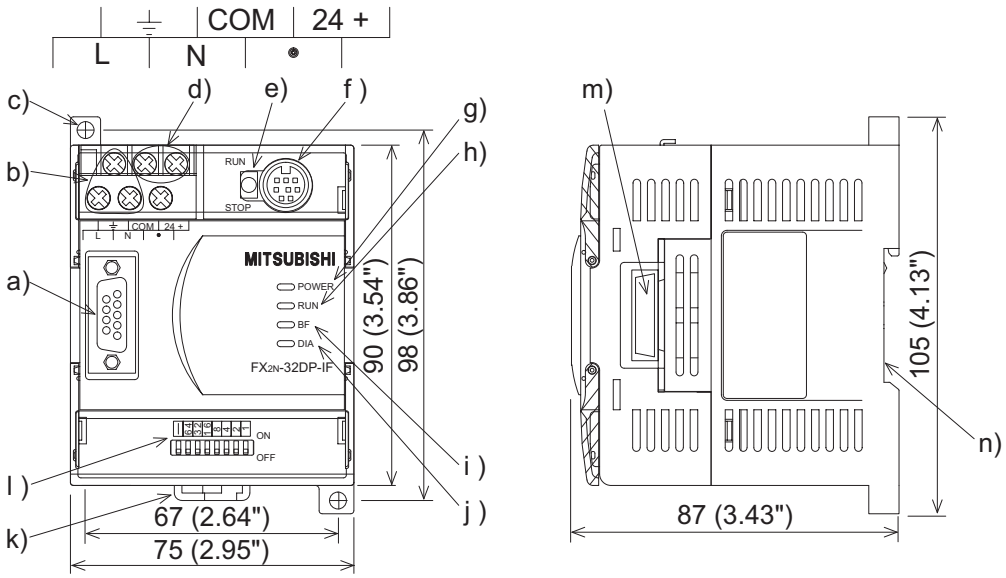
- Up to 256 I/O points and/or up to 8 special function blocks can be connected to the 32DP-IF. However, adjust total control I/O points to 256 or less. See section 1.3.
- The slave address of the 32DP-IF is adjusted by DIP switches. See chapter 5.
- The 32DP-IF can be connected to a Profibus-DP network by a standard 9-pin D-SUB connector and a shielded twisted pair cable complying with EN50170. Optional glassfiber adapters are supported by the 32DP-IF and are available from other vendors.
  See chapter 2.
- An FX-20P-E or personal computer can be used to monitor the devices of the 32DP-IF or to set parameter for special function blocks connected to the 32DP-IF. For operating instructions of the FX-20P-E or personal computer, refer to their respective operation manuals and to section 1.3.1. For device numbers and explanation, refer to Chapter 4. For parameter of 32DP-IF, refer to chapter 6 and appendix B.

1.2 External Dimensions and Each Part Name

Dimensions: mm (inches) Weight: Approx. 0.4 kg (0.88 lbs)

Accessory: GSD files (FD: 1 piece)

Figure 1.1: External Dimensions



a) Connector for Profibus cable (D-SUB 9 pin)

b) Power supply terminals (screws terminal: M3.5 (0.14"))

c) Direct mounting hole (2-ϕ4.5 (0.18"))

d) 24 V DC power terminal (screws terminal: M3.5 (0.14"))

e) RUN/STOP switch: When this switch is in the RUN position, the 32DP-IF will exchange data with extension units/blocks and special function blocks. If this switch is in the STOP position, the 32DP-IF will exchange only input data with extension units/blocks.

f) Communication port for FX-20P-E and personal computer

g) POWER LED : ON when AC power is supplied.

h) RUN LED : ON when 32DP-IF is exchanging data with extension units/blocks and special function blocks.

i) BF LED : ON when a communication error is detected (No data exchange).

j) DIA LED : ON when notice of diagnostic data is detected.

k) Hook for mounting DIN rail

l) DIP switches for slave address of this unit

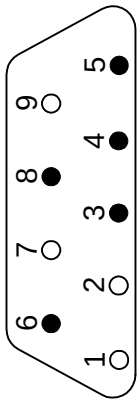
m) Connector for extension cable

n) Groove for mounting DIN rail (DIN rail width: 35 mm (1.38"))

1.2.1 Pin Configuration

The connector is a 9-pin D-SUB type and the pin configuration is shown below.

Figure 1.2: Pin Layout 9-pin D-SUB



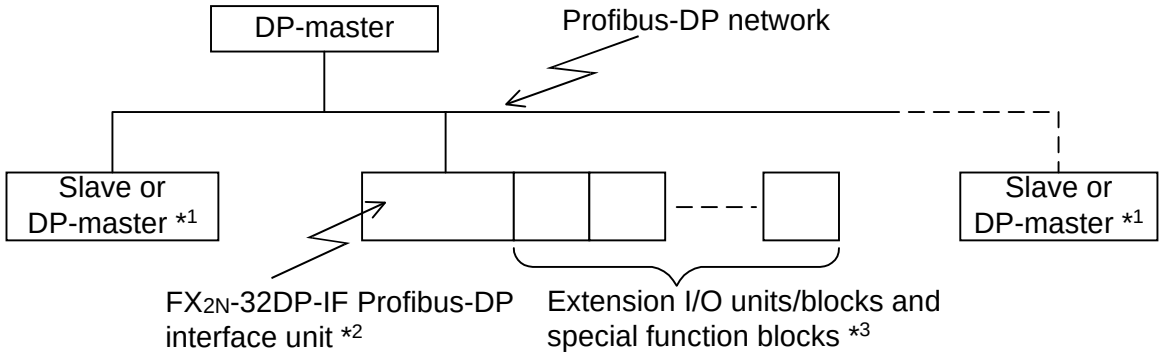
● Assigned
○ Not assigned

Table 1.1: Pin Configuration

Connector	Signal	Meaning
3	RXD/TXD-P	Receive/transmit-Data-P(+)
4	RTS	Request to send
5	DGND	Data Ground
6	VP	Voltage-Plus(+)
8	RXD/TXD-N	Receive/transmit-Data-N(+)
1,2,7,9	NC	Pin not assigned

1.3 System Configuration

Figure 1.3: System Configuration



*1 The units at each end of the Profibus-DP network must have a terminating resistor. This will either be in the master or slave unit or in the Profibus connector.

*2 For connecting monitoring tool, refer to section 1.3.1

*3 For connecting extension I/O units/blocks and special function blocks, refer to section 1.3.2.

Caution

The parameter data of the 32DP-IF must be set correctly in the DP-master, If the parameter data are not correct, the operation of the module might be affected. For a detailed overview of the parameter of 32DP-IF, refer to chapter 6.

1.3.1 Connected Programming Tools

An FX-20P-E or personal computer can be used to monitor the devices of the 32DP-IF or to set parameter data for special function blocks connected to the 32DP-IF. For operating instructions of the FX-20P-E or personal computer, refer to their respective operation manuals. For device numbers and explanation, refer to chapter 4.

Connecting cable is same as FX_{0N}/FX_{2N} programmable controller.

Table 1.2: Connected Programming Tools

Monitoring Tools	Description
FX-20P-E	“Device Monitor”, “Data Change” and “Forced ON/OFF” in the Online Monitor /Test mode can be used for supported devices.
Personal Computer (MELSEC MEDOC PLUS)	“Device Edit” and “Entry Data Monitor” can be used for supported devices.

1.3.2 Connected Extension Units/Blocks

The table below shows extension units/blocks and their data lengths when connected to a 32DP-IF. Data is exchanged between the 32DP-IF and DP-master during every cycle. The maximum amount of data that can be exchanged with the 32DP-IF is 200 bytes of input data and 200 bytes of output data. Please check the specification of the DP-master, it may limit the total amount of exchanged data.

Table 1.3: Connected Extension Units/Blocks and Exchanged Data Length

Items			Description	Exchange Data Length	
				Output Data (Y)	Input Data (X)
Extension I/O Units		FX_{2N}-32ER-ES/UL	Input = 16 points Output = 16 points	2 Bytes (Y0 ~ Y17)	2 Bytes (X0 ~ X17)
		FX_{2N}-32ET-ESS/UL			
		FX_{2N}-48ER-ES/UL	Input = 24 points Output = 24 points	3 Bytes (Y0 ~ Y27)	3 Bytes (X0 ~ X27)
		FX_{2N}-48ET-ESS/UL			
Extension I/O Blocks	FX_{2N} Series	FX_{2N}-16EX-ES/UL	Input = 16 points Output = 0 point	-	2 Bytes (X0 ~ X17)
		FX_{2N}-16EYR-ES/UL	Input = 0 point Output = 16 points	2 Bytes (Y0 ~ Y17)	-
		FX_{2N}-16EYT-ESS/UL			
		FX_{2N}-16EYS-ES/UL			
	FX_{0N} Series	FX_{0N}-8EX-UA1/UL	Input = 8 points Output = 0 point	-	1 Bytes (X0 ~ X7)
		FX_{0N}-8EX-ES/UL			
		FX_{0N}-16EX-ES/UL	Input = 16 points Output = 0 point		2 Bytes (X0 ~ X17)
		FX_{0N}-8ER-ES/UL	Input = 4 points Output = 4 points	1 Bytes (Y0 ~ Y3)	1 Bytes (X0 ~ X3)
		FX_{0N}-8EYR-ES/UL	Input = 0 point Output = 8 points	1 Bytes (Y0 ~ Y7)	-
		FX_{0N}-8EYT-ESS/UL			
		FX_{0N}-16EYR-ES/UL	Input = 0 point Output = 16 points	2 Bytes (Y0 ~ Y17)	
		FX_{0N}-16EYT-ESS/UL			
Special Function Blocks		FX_{2N}-4DA	Digital to analog converter	8 Bytes, Analog output data (BFM #1 ~ #4)	
		FX_{2N}-4AD	Analog to digital converter	-	8 Bytes *1
		FX_{2N}-4AD-PT	PT100 probe interface		8 Bytes *2
		FX_{2N}-4AD-TC	Thermo-couple interface		8 Bytes *3

*1 Total 8 bytes, selection between averaged data (BFM #5 ~ #8) or present data (BFM #9 ~ #12) can be done by GSD file configuration for each channel separately.

*2 Total 8 bytes, selection between °C and °F, averaged or present data can be done by GSD file configuration for each channel separately.

Table 1.4: BFM No. of FX2N-4AD-PT

Items	BFM No.
°C (averaged)	BFM #5 ~ #8
°C (present)	BFM #9 ~ #12
°F (averaged)	BFM #13 ~ #16
°F (present)	BFM #17 ~ #20

*3 Total 8 bytes, selection between °C and °F, averaged or present data and the type of thermocouple can be done by GSD file configuration for each channel separately.

Table 1.5: BFM No. of FX2N-4AD-TC

Items	BFM No.
°C (averaged)	BFM #5 ~ #8
°C (present)	BFM #9 ~ #12
°F (averaged)	BFM #13 ~ #16
°F (present)	BFM #17 ~ #20

1.3.3 Configuration Rules

1) Special function blocks: Max. 8 blocks per 32DP-IF.
   Check the loading on the 5 V DC bus supply. Consumption values for special function blocks can be found in Table 1.7. For maximum available current see the Table 1.6.
2) Maximum I/O points: 256 or less.
3) Check the loading on the 24 V DC service supply. Look up the number of expansion I/O in Figure 1.4. Find the residual current. This can then be used to power sensors etc.
4) Check total exchanged data length in DP-master, this number might be limited by the DP-master unit. Data length is exchanged between the 32DP-IF and a DP-master in every cycle.
   For the data length of connected extension units/blocks, refer to Table 1.3.
   However, the maximum amount of data that can be exchanged with the 32DP-IF is 200 byte inputs and 200 byte outputs.

Table 1.6: 24 and 5 V DC Supply Capacity

Items	Power Supply
24 V DC Service Supply	500 mA at 24 V DC
Max. 5 V DC Bus Supply	220 mA at 5 V DC

Table 1.7: Power Supply for Special Function Blocks

Model	Description	Number of I/O Points	Power Supply	
			Internal 5 V DC (mA)	External 24 V DC (mA)
FX2N-4DA	Digital to analog converter	8	30	200
FX2N-4AD	Analog to digital converter	8	30	55
FX2N-4AD-PT	PT100 probe interface	8	30	50
FX2N-4AD-TC	Thermo-couple interface	8	30	50

Figure 1.4: Number of Expansion I/O and 24 V DC Service Supply Capacity (mA)

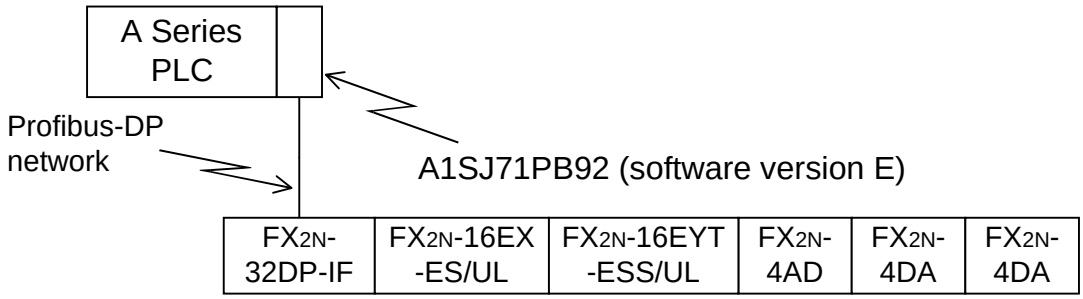
Number of additional output (points)										
> 32										
32	200	150	100	50	0	Invalid configuration				
24	275	225	175	125	75	25				
16	350	300	250	200	150	100	50	0		
8	425	375	325	275	225	175	125	75	25	
0	500	450	400	350	300	250	200	150	100	
	0	8	16	24	32	40	48	56	64	> 64

Number of additional input (points)

For extension unit, refer to FX2N Series Hardware Manual.

1.3.4 Example Configuration

Figure 1.5: Example Configuration



For configuration rules, refer to section 1.3.3.

1) Check special function blocks.

   a) Count special function blocks.
   This 32DP-IF has 3 special function blocks connected (FX2N-4AD × 1, FX2N-4DA × 2). This configuration is OK as the total number of blocks is less than 8.

   b) Check the loading on the 5 V DC bus supply. Consumption values for special function blocks can be found in Table 1.7. For maximum available current see the Table 1.6.

Table 1.8: Check 5 V DC Bus Supply

Items	Internal 5 V DC	External 24 V DC
FX2N-4AD	30 mA	55 mA
FX2N-4DA	30 mA	200 mA
FX2N-4DA	30 mA	200 mA
Total Consumption Values	90 mA <220 mA	455 mA

This configuration is OK as the 5 V DC bus supply consumption value is less than 220 mA (5 V DC bus supply capacity).

However, this system needs a supply of 455 mA from an external 24 V DC power supply, for the special function blocks. In this case, the 32DP-IF can supply 250 mA for external 24 V DC. See next page (check the loading on the 24 V DC service supply)

2) Check total I/O points and the loading on the 24 V DC service supply. For the loading on the 24 V DC service supply, refer to Figurer 1.4.

Table 1.9: Check Total I/O Points and the Loading on the 24 V DC Service Supply

Units/Block Name	Addressable I/O			24 V DC Service Supply	
	Inputs (X)	Outputs (Y)	Special Function Blocks (X/Y)	Sum I/O	Sum
FX2N-32DP-IF	0	0	-	Inputs (X) = 16 Outputs (Y) = 16	+ 250 mA According to Figure 1.4
FX2N-16EX-ES/UL	16	0	-		
FX2N-16EYT-ESS/UL	0	16	-		
FX2N-4AD	-	-	8	-	0 mA
FX2N-4DA	-	-	8	-	0 mA
FX2N-4DA	-	-	8	-	0 mA
	16	16	24	This configuration can supply 250 mA at 24 V DC service supply for other usages.	
	Total I/O is 56 points <256 points				

This configuration is OK as the total I/O points are less than 256. It is also OK with the loading on the 24 V DC service supply, this configuration can supply 250 mA at 24 V DC service supply for other usages.

3) Check the total allowable exchanged data length for each input data and output data in the DP-master, because this number might be limited by the DP-master unit.
Maximum exchanged data length of 32DP-IF can be found in Table 3.3. For the data length of connected extension units/blocks, refer to Table 1.3.

Table 1.10:Check Total Exchanged Data Length

Units/Blocks Name	Exchanged Data Length	
	Input Data	Output Data
FX2N-16EX-ES/UL	2 bytes	0 byte
FX2N-16EYT-ESS/UL	0 byte	2 bytes
FX2N-4AD	8 bytes	0 byte
FX2N-4DA	0 byte	8 bytes
FX2N-4DA	0 byte	8 bytes
Total exchanged data length	10 bytes < 200 bytes *1 <244 bytes *2	18 bytes < 200 bytes *1 <244 bytes *2

*1 This value is maximum exchanged data length of 32DF-IF.

*2 This example configuration use A series programmable controllers A1SJ71PB92D (software version is E). This DP-master is limited to 244 bytes of input data and 244 bytes of output data.

This configuration is OK as the each total input data and total output data length is less than 200 bytes.

2. Wiring and Mounting Arrangements

2.1 Mounting Arrangements

To prevent a rise in temperature, mount the units to back walls. Never mount them to the floor, ceiling or side wall of an enclosure.

Figure 2.1: Mounting Location

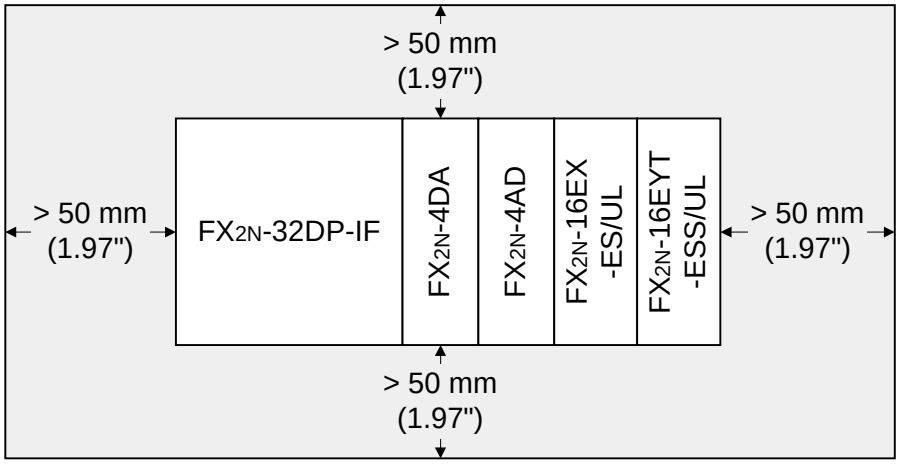
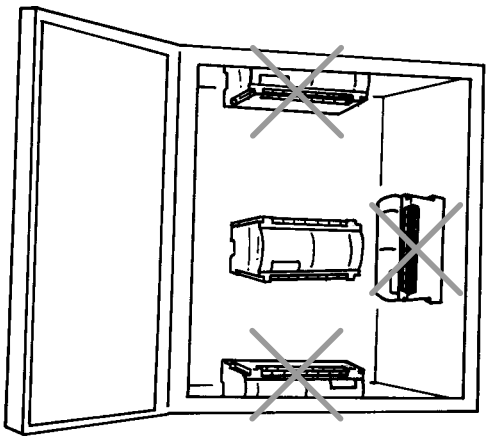


Figure 2.2: Mounting Arrangement

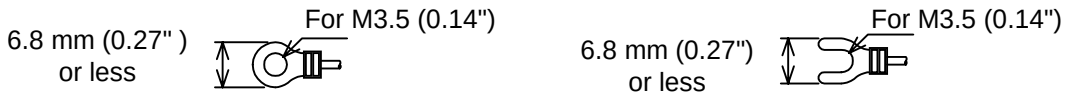


2.2 Wiring

2.2.1 Caution for Wiring

1) Do not lay signal cable near to high voltage power cable or house them in the same trunking duct. Effects of noise or surge induction may occur. Keep signal cables a safe distance of more than 100 mm (3.94") from these power cables.
2) Ground the shied wire or the shield of a shielded cable at one point on the programmable controller. Do not, however, ground at the same point as high voltage lines.
3) The terminal screws of the 32DP-IF are M3.5 (0.14"), therefore the crimp style terminal (see drawing) suitable for use with these screws should be fitted to the cable for wiring.

Figure 2.3: Crimp Terminals



4) The terminal tightening torque is 0.5 to 0.8 N•m. Tighten securely to avoid malfunction.
5) Cut off all phases of power source before installation or performing wiring work in order to avoid electric shock or damage of product.
6) Replace the provided terminal cover before supplying power and operating the unit after installation or wiring work, in order to avoid electric shock.

2.2.2 Wiring for 32DP-IF and Profibus-DP Network

To connect the 32DP-IF to a Profibus-DP network use only the Profibus connectors and shielded twisted-pair cable complying with EN50170.

Please use terminating resistors and Profibus connectors as shown in the DP-master manual and Profibus connector manual.

The 32DP-IF does not have a terminating resistance built-in.

Figure 2.4: Wiring about 32DP-IF and Profibus-DP Network

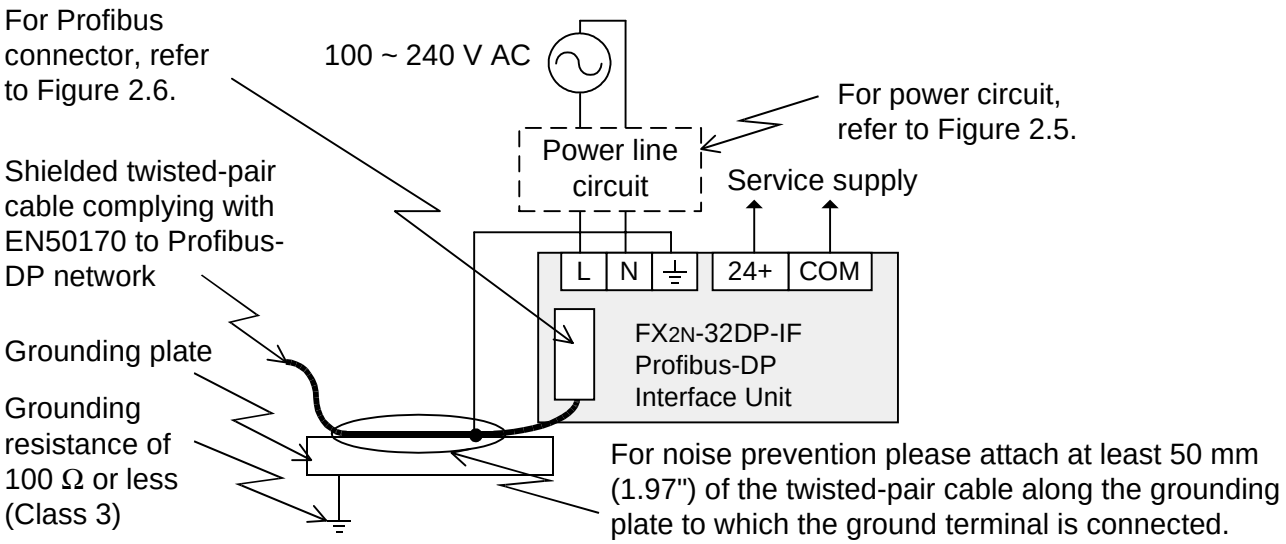


Figure 2.5: Wiring for Power Line Circuit

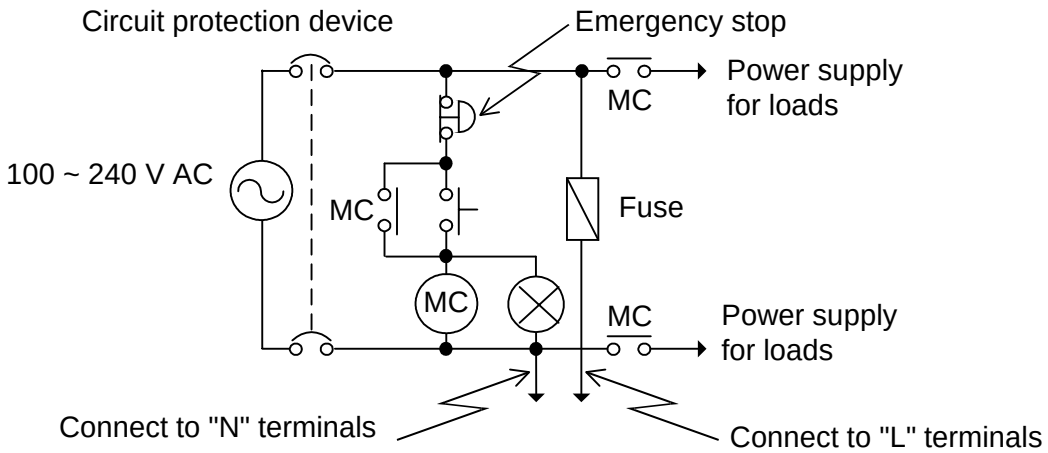
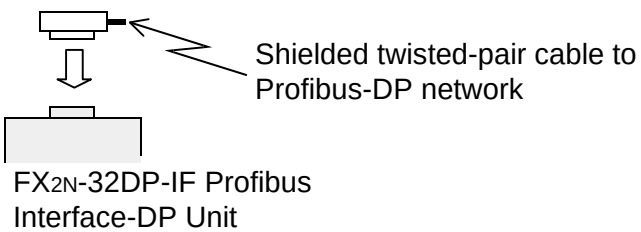


Figure 2.6: Profibus Connector



2.2.3 Wiring for Extension I/O Units/Blocks and Special Function Blocks

1) Wiring about 32DP-IF and special function block

   Connecting method is same as FX_{2N} sires programmable controller. For special function block's wiring, refer to each user's manual.

2) Wiring about 32DP-IF and Extension Unit

   Connect "COM" terminal at the 32DP-IF to "0V" terminal at the extension unit. For extension unit's wiring, refer to FX_{2N} Series Hardware Manual.

3) Wiring about 32DP-IF and Extension Block

   The wiring method for the "S/S" terminal on the extension blocks is shown in the Figures 2.7 and 2.8.
   For extension block's wiring and special function block's wiring, refer to each manual.

Figure 2.7: Source (positive input connection, negative S/S)

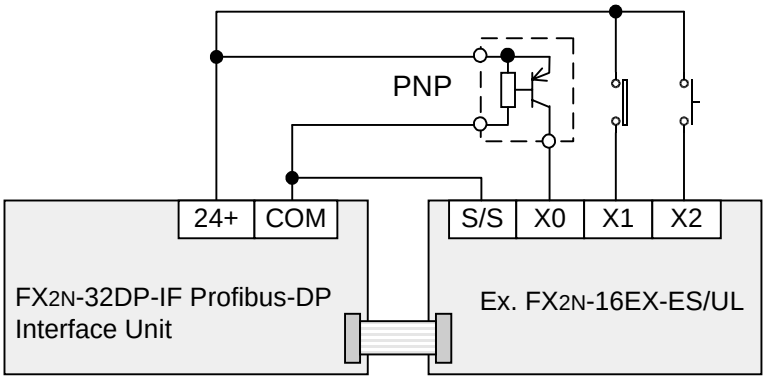
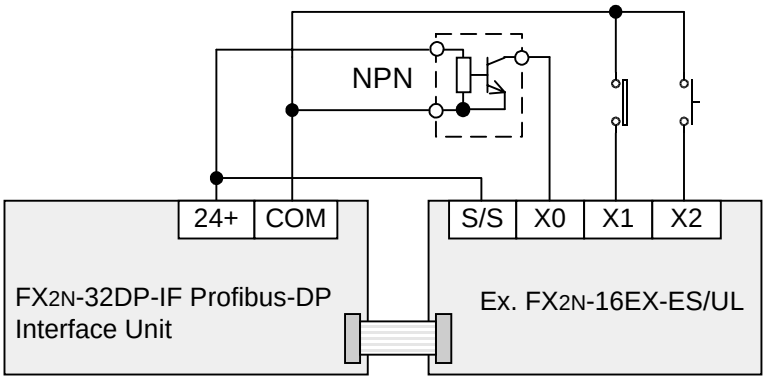


Figure 2.8: Sink (negative input connection, positive S/S)



3. Specifications

3.1 General Specifications

Table 3.1: General Specifications

Item	Description
Operating Temperature	0 to 55 °C (32 to 131 °F)
Storage Temperature	-20 to 70 °C (-4 to 158 °F)
Operating Humidity	35 to 85% Relative Humidity, No condensation
Storage Humidity	35 to 90% Relative Humidity, No condensation
Vibration Resistance - Direct Mounting	Conforms to JIS C0040; 10 - 57 Hz: 0.75 mm Half Amplitude 57 - 150 Hz: 9.8 m/s^2 Acceleration Sweep Count for X, Y, Z: 10 times (80 min in each direction)
Vibration Resistance - DIN rail Mounting	Conforms to JIS C0040; 10 - 57 Hz: 0.035 mm Half Amplitude 57 - 150 Hz: 4.9 m/s^2 Acceleration Sweep Count for X, Y, Z: 10 times (80 min in each direction)
Shock Resistance	Conforms to JIS C0041: 147m/s^2 Acceleration, Action Time: 11 ms 3 times in each direction X, Y, and Z
Noise Immunity	1,000 Vp-p, 1microsecond, 30 - 100 Hz, tested by noise simulator
Dielectric Withstand Voltage	1,500 V AC > 1 min, tested between all points, terminals and ground
Insulation Resistance	5 MΩ > at 500 V DC, tested between all points, terminals and ground
Grounding	Class 3 (Grounding resistance is 100 Ω or less)
Planned Certifications	CE

3.2 Power Supply Specifications

Table 3.2: Power Supply Specifications

Item	Description
Power Supply	100 ~ 240 V AC +10% -15%, 50/60 Hz
Max. Allowable Momentary Power Failure Period	10 ms at 100 V AC (< 10 ms, 32DP-IF = RUN continue, > 10 ms, 32DP-IF = power down)
Fuse (size) Rating	3 A <ϕ 5 × 20 mm (0.2 × 0.79 inches)>
In-rush Current	100 V AC Max. 40 A < 5 ms, 200 V AC Max. 60 A < 5 ms
Power Consumption	35 VA
24 V DC Service Supply	500 mA
Max. 5 V DC Bus Supply	220 mA

3.3 Performance Specifications

Table 3.3: Performance Specifications

Items		Specifications
Maximum Number of Controllable I/O Points		Maximum 256 points (see section 1.3)
Transmission data (Maximum exchanged data length)		400bytes can be sent and received during one bus cycle. (input: 200 bytes, output: 200 bytes)
Transmission Type		Bus network
Connector	9 pin D-SUB	Connector for Profibus-DP network
	8 pin mini DIN	Connector for FX-20P-E or personal computer (MELSEC MEDOC PLUS)
Supported Baud Rates and Bus Length (bps)	9.6k, 19.2k, 45.45k, 93.75k	1,200 m (3,937')
	187.5k	1,000 m (3,281')
	500k	400 m (1,312')
	1.5M	200 m (656')
	3M, 6M, 12M	100 m (328')
LED Indicators	POWER LED	ON when AC power is supplied.
	RUN LED	ON when 32DP-IF is exchanging data with extension I/O blocks/ units and special function blocks.
	BF LED	ON when a communication error is detected. (No data exchange)
	DIA LED	ON when notice of diagnostic data is detected.

4. Advanced Devices

4.1 Data Registers

Table 4.1: Supported Data Register List

Items	Description
D0 ~ D99	Input (sent) data to DP-master *1
D100 ~ D199	Output (received) data from DP-master *2
D200 ~ D299	Parameter data *3

*1 If the 32DP-IF is in data exchange mode, the sent data to a DP-master can be monitored by reading data registers D0 ~ D99 in the programming tool.
For example of allocating device, refer to section 4.1.1.

*2 If the 32DP-IF is in data exchange mode, the received data from a DP-master can be monitored by reading data registers D100 ~ D199 in the programming tool.
For example of allocating device, refer to section 4.1.1.

*3 The data registers D200 to D299 contain the user parameter data which sent by the DP-master. After power on, when the 32DP-IF is in the search baud rate state or the wait parameter state, these data register contain the default parameter data.
For user parameter, refer to chapter 6. For default parameter settings, refer to appendix A.

4.1.1 Example of Allocating Device

Figure 4.1: Example of Allocating Device

	X0 ~ X3 Y0 ~ Y3	X10 ~ X27	Using Ch1 ~ Ch4 (average data)	Using Ch1 ~ Ch4	Y10 ~ Y17
FX2N- 32DP-IF	FX0N-8ER -ES/UL	FX2N-16EX -ES/UL	FX2N-4AD	FX2N-4DA	FX0N-8EYT -ESS/UL

Table 4.2: Example of Allocating Device

Device No.		Description
D0 to D3		FX2N-4AD's input data (BFM #5 ~ #8)
D4	Lower 8 bits	FX0N-8ER-ES/UL's X0 ~ X3 (bit 4 ~ 7 not used)
	Higher 8 bits	FX2N-16EX-ES/UL's X10 ~ X17
D5	Lower 8 bits	FX2N-16EX-ES/UL's X20 ~ X27
	Higher 8 bits	These devises area not used.
D6 ~ D99		
D100 ~ D103		FX2N-4DA's output data (BFM #1 ~ #4)
D104	Lower 8 bits	FX0N-8ER-ES/UL's Y0 ~ Y3 (bit 4 ~ 7 not used)
	Higher 8 bits	FX0N-8EYT-ESS/UL's Y10 ~ Y17
D105 ~ D199		These devices are not used.

Note:

In configuring 32DP-IF GSD file, first assign special function blocks, second extension I/O units/blocks' input data, and finally extension I/O units/blocks' output data. The physical placement of the module does not have to correspond with the GSD file order.

4.2 Diagnostic Devices (Special Devices)

Unsettable Devices:

Any device of type M or D that is marked with a "(✘)" or "(✍)" cannot be set by the programming tool. In the case of M devices this means the associated coil cannot be driven but all device can be monitored. For data devices D, new values cannot be written to the register by a user but the register contents can be monitored.

Symbol Summary:

- ✘ automatically written to by the 32DP-IF
- ✍ automatically written to by the DP-master
- ✈ 32DP-IF send an extended diagnosis message to DP-master if marking device is ON. For diagnostic massage, refer to chapter 7.

4.2.1 32DP-IF Status (M8000 ~ M8009 and D8000 ~ D8009)

Table 4.3: Special Auxiliary Relays (M8000 ~ M8009)

Diagnostic Device	Name	Description
M8000 (✕)	RUN LED monitor	ON when 32DP-IF is exchanging data with extension I/O blocks/units and special. This device operate same as RUN LED.
M8001 ~ M8003	Reserved	
M8004 (✕) (ref. D8004)	Error occurrence	ON when one or more error flags (M8060 to M8068) is ON. If this bit is ON, error number is written in D8004.
M8005, M8006	Reserved	
M8007 (✕) (✈) (ref. D8007)	Momentary power failure	See Figure 4.2.
M8008, M8009	Reserved	

Table 4.4: Special Data Registers (D8000 ~ D8009)

Diagnostic Device	Name	Description
D8000	Reserved	
D8001 (✕)	32DP-IF version	This value is 32DP-IF version code. See Figure 4.3.
D8002, D8003	Reserved	
D8004 (✕) (✈)	Error number M☆☆☆☆	The contents of this register ☆☆☆☆ identifies which error flag is active, i.e. if ☆☆☆☆ = 8061, identifies M8061
D8005, D8006	Reserved	
D8007 (✕) (✈)	Number of momentary power failures	This value is counted when M8007 is ON. This value is reset on full power OFF.
D8008 (✕)	Power failure detection period	Power failure detection period is 10 ms.
D8009	Reserved	

Figure 4.2: Momentary Power failures

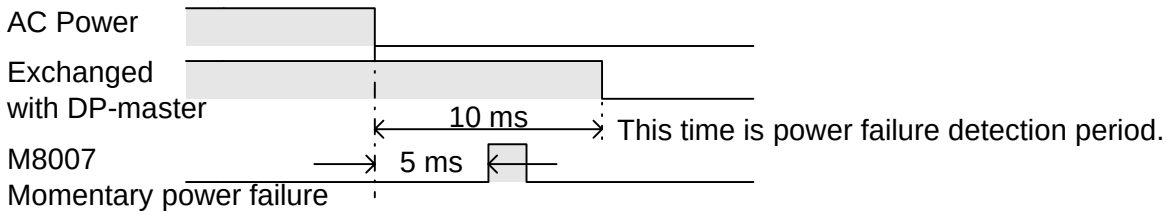
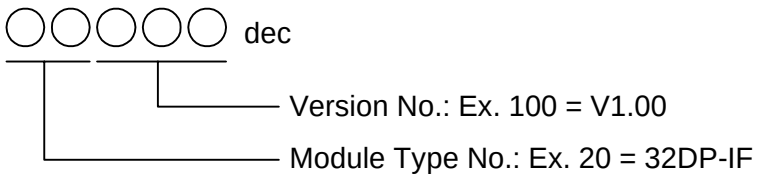


Figure 4.3: 32DP-IF Version



4.2.2 Profibus-DP Network Status (M8020 ~ M8039 and D8020 ~ D8039)

Table 4.5: Special Auxiliary Relays (M8020 ~ M8039)

Diagnostic Device	Name	Description
M8020	Setting parameter	When this bit is changed from OFF to ON, the parameter D200 ~ D299 (made by the programming tool) is written to special function blocks' BFM. After the write is completed, this bit is turned automatically to OFF.
M8021 ~ M8033	Reserved	
M8034	All output disable	All physical switch gear for activating outputs is disabled. However, for debugging purposes the logical state of these outputs (D100 ~ D199) can be set, but remain disabled in the actual module.
M8035 ~ M8039	Reserved	

Table 4.6: Special Data Registers (D8020 ~ D8039)

Diagnostic Device	Name	Description
D8020 (✍)	Data exchange status	Data register D8020 contains a status bit for data exchange. If this is "1", 32DP-IF is in data exchange mode. If this is "0", 32DP-IF is not in data exchange mode.
D8021 (✍)	Swap byte order	See note 1.
D8022 (✍)	Length of input (sent) data in byte	The values held in these devices are copied from the input data length and output data length setting in the DP-master.
D8023 (✍)	Length of output (received) data in byte	
D8024 (✍)	Baud rate	See note 2.
D8025 (✍)	Communication status	See note 3.
D8026 (✖)	Profibus module ID (PNO ID code)	PNO-Nr.F232 (Hex) (This number contains the Profibus module ID number for the 32DP-IF.)
D8027 (✖)	Slave address	The slave address is set only by the 32DP-IF's DIP switches. The slave address value is 0 to 126. The address change by a Profibus-DP Class 2 master via the network or by a programming device is not supported.
D8028	Reserved	
D8029 (✖) (✈)	Error status	See note 4.

Note 1: Swap byte order

Some DP-masters handle lower bytes and higher bytes of a word in a reverse order than the 32DP-IF. To enable the module to communicate with these masters, bit 0 of data register D8021 can be set. If bit 0 is "1", the low order byte and the high order byte of each user data word and of the user specific diagnosis will be swapped. Bit 0 of D8021 can also be set or reset by the second user defined parameter byte received from a master. The default value after power up is "0".

Note 2: Baud rate

This device shows the current baud rate of the Profibus-DP network. The baud rate depends on the DP-master settings. The following table shows the supported baud rates and the value of D8024. If the module is in baud search mode, this value frequently changes until the module has found a supported baud rate as follows.

Table 4.7: Baud Rate in D8024

Values in D8024 (Hex)	Baud Rate (bps)		Values in D8024 (Hex)	Baud Rate (bps)
96E2 H	9,600		05E5 H	500k
19E3 H	19.2k		15E5 H	1.5M
45E3 H	45.45k		03E6 H	3M
93E3 H	93.75k		06E6 H	6M
18E4 H	187.5k		12E6 H	12M

Note 3: Communication status

This device is the 32DP-IF's communication status. According to the status of 32DP-IF the bits are set and reset as follows.

Table 4.8: Communication Status in D8025

Bit No.	Description	1 (ON)	0 (OFF)
Bit 0	Module on-line/off-line	Module on-line	Module off-line
Bit 1	Reserved		
BIt 2	Diagnosis flag	New diagnosis not yet fetched by DP-master	New diagnosis fetched by DP-master
Bit 3	Reserved		
Bit 4, 5	DP-status	(bit 5, 4) = (0, 0)	Wait parameter state
		(bit 5, 4) = (0, 1)	Wait configuration state
		(bit 5, 4) = (1, 0)	Data exchange state
		(bit 5, 4) = (1, 1)	Not possible
Bit 6, 7	DP-watchdog state	(bit 7, 6) = (0, 0)	Baud search state
		(bit 7, 6) = (0, 1)	Baud control state
		(bit 7, 6) = (1, 0)	DP search state
		(bit 7, 6) = (1, 1)	Not possible
Bit 8	Reserved		
BIt 9	Clear data global control *1	Clear data command received	No clear data command received
Bit 10	Unfreeze global control *2	Unfreeze command received	No unfreeze command received
Bit 11	Freeze global control *3	Freeze command received	No freeze command received
Bit 12	Unsync global control *4	Unsync command received	No unsync command received
Bit 13	Sync global control *5	Sync command received	No sync command received
Bit 14, 15	Reserved		

*1 Clear data global control: When this command is received, the 32DP-IF set to "0" the output data (D100 ~ D199) of extension units/blocks connected it.

*2 Unfreeze global control: The UNFREEZE control command stops freeze control mode. The input data (D0 ~ D99) of extension units/blocks connected to the 32DP-IF is immediately sent to the DP-master.

*3 Freeze global control: The DP-master sends a FREEZE control command to a group of DP-slaves to hold their current input status. The input data (D0 ~ D99) of extension units/blocks connected to the 32DP-IF are withheld until the next FREEZE/UNFREEZE control command is received.

*4 Unsync global control: The UNSYNC command stops SYNC control mode. The output data (D100 ~ D199) send from the DP-master is immediately transmitted to extension units/blocks connected to the 32DP-IF.

*5 Sync global control: The DP-master sends a SYNC control command to a group of DP-slaves to synchronize their current output states. The output data (D100 ~ D199) of extension units/blocks connected to the 32DP-IF remains constant until the next SYNC/UNSYNC command is received.

Note 4: Error status

Data register D8029 reflects the error status of the 32DP-IF. In case of a general error (bit 0 = ON) the module tries to send a static diagnosis to the DP-master. In this case normal data exchange is not possible. If bit 0 returns to the Off state, the static diagnosis message is also reset.

The definition of the error bit is shown in the table below.

Table 4.9: Error status in D8029

Bit No.	Description	0 (OFF)	1 (ON)
Bit 0	general error	No general error	This bit is ON if one or more error bits (bit 2, 6, 7) are ON. Check Bit 2, 6 and 7 in D8029.
Bit 1	Reserved		
Bit 2	External 24 V power error	Power supply is normal	DC 24 V power supply failure
Bit 3 ~ 5	Reserved		
Bit 6 (ref. Table 4.11)	I/O bus error	No I/O bus error	I/O bus error occurred. Check extension bus cable for I/O extension units/blocks and error code in D8060.
Bit 7 (ref. Table 4.11)	Operation error	No operation error	Operation error occurred. Check extension bus cable for special function blocks, and DP-master parameter, and error code in D8067 and D8068.
Bit 8, 9	Reserved		
Bit 10 (ref. Table 4.11)	configuration error	Configuration data valid	Invalid configuration data received. Check configuration for 32DP-IF in the DP-master and D8040 ~ D8055.
Bit 11 (ref. Table 4.11)	Parameter error	Parameter data valid	Invalid parameter data received. Check parameter for 32DP-IF in the DP-master and D200 ~ D299, and error code in D8064and D8068.
Bit 12 ~ 14	Reserved		
Bit 15	RUN/STOP status	RUN/STOP switch is in RUN position	RUN/STOP switch is in STOP position

4.2.3 Configuration Status (M8040 ~ M8059 and D8040 ~ D8059)

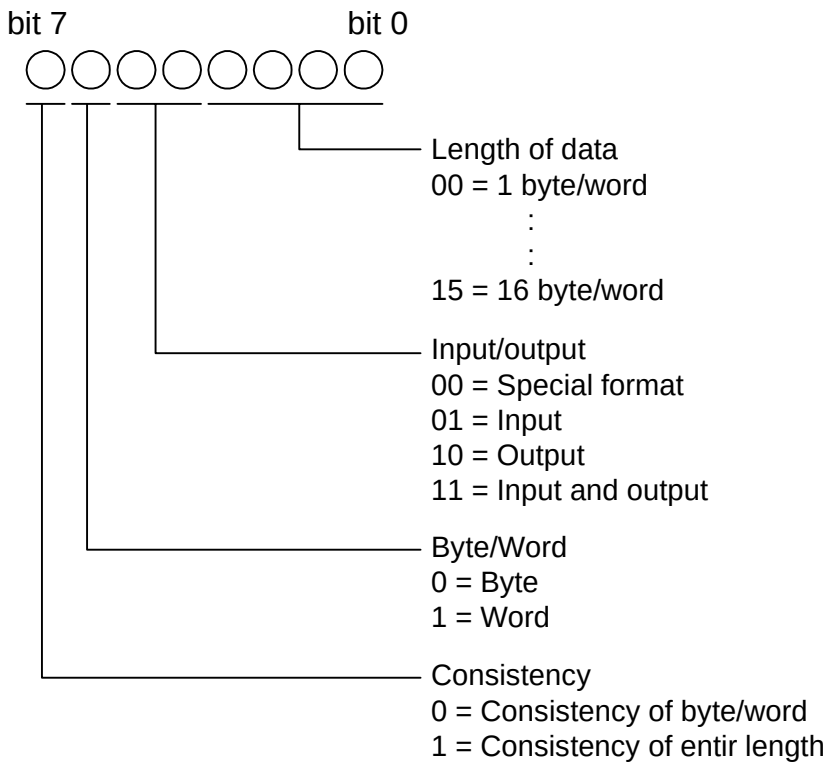
M8040 ~ M8059 are reserved. The configuration bytes in D8040 ~ D8059 define the amount of data which is exchanged between the corresponding I/O units/blocks, special function blocks and the DP-master.

Table 4.10:Special Data Registers (D8040 ~ D8059)

Diagnostic Device		Name	Description
D8040 (✖)	Lower 8 bits	Configuration data 1 *1	The data registers D8040~D8055 display the actual configuration of the node station. After power on, when the 32DP-IF is in the search baud rate state or in the wait configuration state, these data registers contain the default configuration data.
	Higher 8bits	Configuration data 2 *1	
D8041 (✖)	Lower 8 bits	Configuration data 3 *1	
	Higher 8bits	Configuration data 4 *1	
D8042 (✖)	Lower 8 bits	Configuration data 5 *1	
	Higher 8bits	Configuration data 6 *1	
:		:	
D8055 (✖)	Lower 8 bits	Configuration data 31 *1	
	Higher 8bits	Configuration data 32 *1	
D8056 ~ D8059		Reserved	

*1 This value shows as following Figure.
Ex.1 10 hex = 1 byte (8 bit) inputs not consistent
Ex.2 63 hex = 4 word outputs not consistent

Figure 4.4:Configuration Data



4.2.4 Error Status (M8060 ~ M8069 and D8060 ~ D8069)

Table 4.11:Special Auxiliary Relays (M8060 ~ M8069)

Diagnostic Device	Name	Check Points
M8060 (✕) (✈) (ref. D8060, D8061)	I/O configuration error	If this flag is ON, check error code in D8060, D8061 and extension cable.
M8061 (✕) (✈) (ref. D8060, D8061)	32DP-IF hardware error	If this bit is ON, check error code in D8061.
M8062, M8063	Reserved	
M8064 (✕) (✈) (ref. D8064	Parameter error	If this flag is ON, check error code inD8064 and DP-master setting.
M8065, M8066	Reserved	
M8067 (✕) (✈) (ref. D8067)	Operation error	If this flag is ON, check error code in D8067 and D8068, DP-master parameter, and the extension cable.
M8068 (✕) (ref. D8068)	Parameter error and operation error	If M8064 or M8067 is ON, this bit would be set to ON. This bit is cleared by resetting the power supply.
M8069	Reserved	

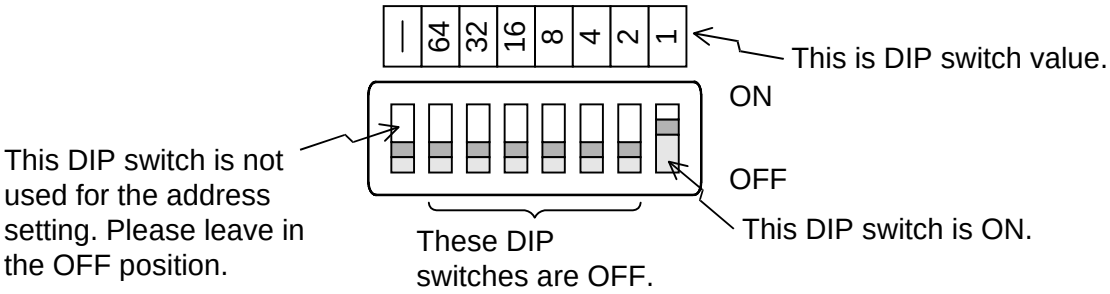
Table 4.12:Special Data Registers (D8060 ~ D8069)

Diagnostic Device	Name	Error code	Description
D8060 (✕) (✈)	I/O configuration error	This device contains the lowest device address that caused the error. Check D8061	
D8061 (✕) (✈)	32DP-IF hard-ware error	0	No error
		6102	Operation circuit error: Please contact a service represen-tative.
		6103	I/O bus error: Check extension cable for Extension I/O units/blocks.
		6129	BFM #29 (error status) of a connected special function block shows a value that is different from “0”. Please check the diagnosis message at the DP-master.
D8062, D8063	Reserved		
D8064 (✕) (✈)	Parameter error	0	No error
		6406	Parameter error for extension units/blocks: Check error code in D8068, and parameter in the DP-master.
		6407	Parameter length error: Parameter data too long, check parameter’s length in the DP-master.
D8065,D8066	Reserved		
D8067 (✕) (✈)	Operation error	0	No error
		6708	Operation error: Operation error for transmitting special function block is occurred, check error code in D8068, and DP-master parameter, and extension cable.
D8068 (✕) (✈)	Parameter error and operation error	This device contains the lowest special function block’s address that caused the error. Check D8064 and D8067.	
D8069	Reserved		

5. Address Setting

5.1 Setting Address

Slave address of 32DP-IF for Profibus network is set by the ON/OFF configuration of DIP switches. Slave address setting range is 0 ~ 126. When 32DP-IF's power supply is turned ON, the slave address is the sum total of these DIP switch values.DIP Switches



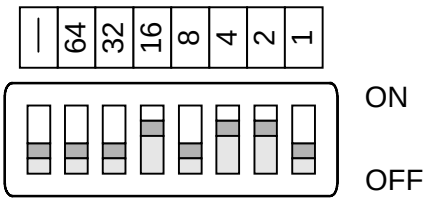
Note:

If the address of 32DP-IF is changed, the 32DP-IF must be turned OFF and ON again in order to activate the new address.

5.2 Example Address Setting

If slave address of 32DP-IF is set to "22", DIP switches are as shown below.

Figure 5.1: Address Setting



6. User Parameter

6.1 User Parameter Rules

Some bytes of input data and output data exchanged with the DP-master (the 32DP-IF's configuration) must be defined by user parameter. Also defined by user parameters are how the exchanged data should be distributed between the available I/O points and special function blocks. Some applications require initial settings, like gain and offset of analog blocks. For these purposes, the 32DP-IF requires a set of parameter data, which must be determined by the user parameter.

For "after power on" parameter, refer appendix A. For user parameter example, refer to appendix B.

Note:

User parameters become valid for 32DP-IF and special function blocks (ex. FX_{2N}-4AD, FX_{2N}-4DA).

Table 6.1: User Parameter Configuration

	Byte No.
User parameter for 32DP-IF	0
	1
User parameter for first special function block	2
	:
	1 + (2 + m_1 *1)
User parameter for second special function block	1 + (2 + m_1 *1) +1
	:
	1 + (2 + m_1 *1) + (2 +m_2 *1)
:	:

*1 m_1, m_2: Total length of parameter data for this special function block.

Figure 6.1: User Parameter Rules

	For 32DP-IF			
Byte No.	**0**	**1**		
		Bit 0	**Bit 1**	**Bit 2**
Meaning	Reserved (must be 0)	Swap data flag	I/O block status is checked every cycle: Y/N	Special function block's BFM #29 (Error status) is checked: Y/N.
Description		If this bit is ON (1), byte data are swapped within a word.	If this bit is ON (1), the status check of the I/O units/blocks is performed in every cycle.	If this bit is ON (1), BFM #29 in all connected special function blocks is checked in every cycle.

	For first special function block			
Byte No.	**2** *1	**3**	**4**	**5**
Meaning	Type code of special function block, lower byte of BFM 30 *2	Type code of special function block, higher byte of BFM 30 *2	Total length m of parameter data for this special function block.	Number (n) of BFM for data exchange *4
Description			m = 2 + n + 3 × b *3	

	First special function block			
Byte No.	**6**	**7**	**.....**	**5 + n**
Meaning	First BFM address for data exchange *4	Second BFM address for exchange *4	....	n th BFM address for exchange *4
Description				

	First special function block			
Byte No.	**5 + n +1**		**5 + n + 2**	**5 + n + 3 × 1**
	Bit 7	**Bit 0 ~ 6**		
Meaning	Writing flag	BFM address adjusted *5	Lower byte of parameter data *5	Higher byte of parameter data *5
Description	If this BFM is adjusted, this bit is ON (1). *5			

	First special function block			
Byte No.	**5 + n + 3 × 1 +1**		**5 + n + 3 × 1 + 2**	**5 + n + 3 × 2**
	Bit 7	**Bit 0 ~ 6**		
Meaning	Writing flag	BFM address adjusted *5	Lower byte of parameter data *5	Higher byte of parameter data *5
Description	If this BFM is adjusted, this bit is ON (1). *5			

	For first special function block		For second special function block	
Byte No.	**.....**	**(5 + n + 3 × b)** *6	**(5 + n + 3 × b) +1** *7	**.....**
Meaning	.....	Higher byte of parameter data *5	Type code of special function block, lower byte of BFM 30 *2	.....
Description				

*1 This byte number is the first parameter data of first special function block.

*2 Type code of special function block is as following table. This code in the parameter must be written first in the Lower byte and second in the higher byte.

Table 6.2: Type Code of Special Function Blocks

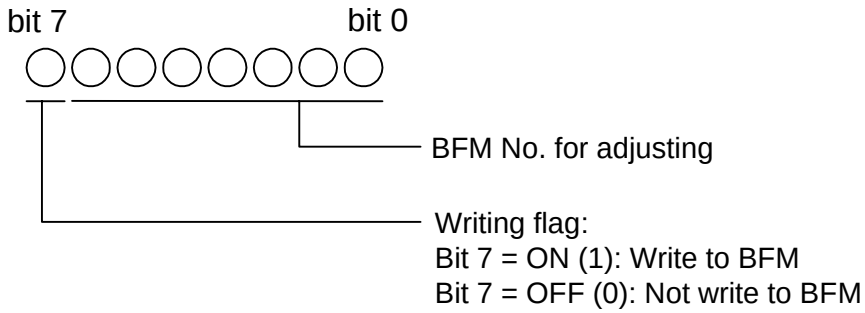
Type	BFM 30 Code Dec	BFM30 Code Hex
FX2N-4AD	K2010	07DA Hex
FX2N-4AD-TC	K2030	07EE Hex
FX2N-4AD-PT	K2040	07F8 Hex
FX2N-4DA	K3020	0BCC Hex

*3 b: This value is number of BFM for adjusting.

*4 Number of exchanged BFM for input or output data (n=0 ~ 32) defines how many words are reserved for data exchange with the DP-master. The following bytes define the BFM addresses of those words.
For example K3 K1 K2 K5 defines 3 words of input data, read from BFM #1, BFM #2 and BFM #5 of the corresponding special function block or written to BFM #1, BFM #2 and BFM #5.

*5 The format of this parameter byte is “bit 7 = write flag” and “bit 6 ~ bit 0 = BFM address”. If “bit 7 = ON (1)”, the data of the following two bytes are written to the BFM specified in bit 6 ~ bit 0. If bit7 = 0, the following two bytes will be ignored. This mechanism is used to write all parameter data from the GSD file or D200 ~ D299 to the BFM of the special function block.

Figure 6.2: Order BFM No. for adjusting BFMs



*6 This byte number is the last parameter data of first special function block.

*7 This byte number is the first parameter data of second special function block.
If 32DP-IF uses 4 special function blocks, user parameter must be made 4 patterns (byte No. “2” ~ “5 + n + 3 × b”).

6.2 Configuring Slave Parameter

Caution:

The user parameter data and configuration of the 32DP-IF must always be consistent. To ensure that the user parameter data and the configuration of the 32DP-IF are matching each other, the user parameter data set should always be constructed by using the GSD file that has been delivered with the 32DP-IF.

6.2.1 Configuring Slave Parameter by GSD file

The parameter setting of the 32DP-IF can be entirely defined using the GSD file that comes on the disk together with 32DP-IF. For an easy adjustment of all user parameter data, the Mitsubishi Profimap Software V2.X or a configuration software from another vendor which is supporting extended parameter setting should be used.

Note:

In configuring 32DP-IF GSD file, first assign special function blocks, second extension I/O units/blocks' input data, and finally extension I/O units/blocks' output data. The physical placement of the module does not have to correspond with the GSD file order.

6.2.2 Configuring Slave Parameter by Programming Tool

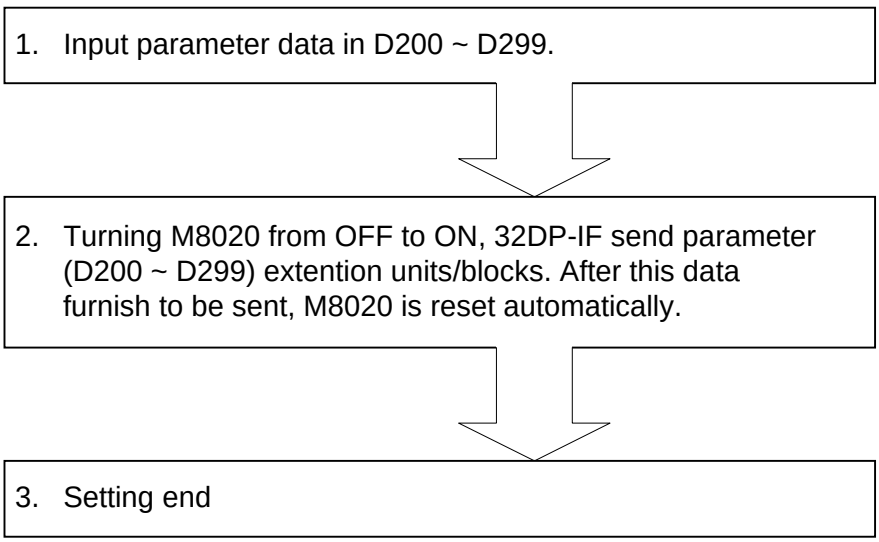
The process of defining a parameter using the programming tool is shown in Figure 6.3.

Please only use a programming tool if configuring a single special function block. It is recommended to utilize the functionality of the GSD file when configuring more than one. As it is much easier to use for this purpose.

Caution:

Any mistake in changing D200 ~ D299 can lead to a different interptetation of the Profibus-DP data, which can result in a malfunction of the connected I/O units/blocks and special function blocks.

Figure 6.3: Process Making Parameter Data by Programming Tool



7. Diagnostic Message

7.1 Diagnostic Massage Frame

When a diagnostic error occurs in the 32DP-IF, a diagnostic message is sent form the 32DP-IF to the DP-master as shown in Figure 7.1. Refer to section 4.2 for the diagnostic message description.

Note:

If the DP-master receives a diagnostic message, make provisions for the system to act safely in accordance with the error message.

Figure 7.1: Diagnostic Massage Frame

Byte No.	0	1	2	3
Description	Total length of diagnostic massage data is 9 (09 Hex)	First diagnostic message		Second diagnostic message
		Lower byte of D8029	Higher byte of D8029	Lower byte of D8004

Byte No.	4	5	6	7
Description	Second diagnostic message	Third diagnostic message		Lower byte of last diagnostic message data *2
	Higher byte of D8004	Lower byte of diagnostic *1	Higher byte of error code *1	

Byte No.	8
Description	Higher byte of last diagnostic message data *2

*1 This diagnostic message is either number of momentary power failures or the error code relating to the contents of D8004 (byte No. 3, 4). For error code, refer to section 4.2.4 or 8.3.3.

*2 This diagnostic message is either “0” or the contents of D8068.

7.2 Diagnostic Message Contents List

Table 7.1: Diagnostic Message List

Item	Third diagnostic message	Last diagnostic message
32DP-IF status is STOP	This velure is “0”.	This velure is “0”.
Momentary power failure	This velure is number of momentary power failures in D8007.	
Power down		
I/O bus error	This velure is error code in D8061.	This velure is in D8068.
Parameter error	This velure is error code in D8064.	
Operation error	This velure is error code in D8067.	

8. Diagnostics

8.1 Preliminary Checks

1) Check “POWER LED”. If this is OFF, please see section 8.2.
2) Check power supply for special function blocks and extension I/O units/blocks.
   If this can not be supplied, 32DP-IF will not operate correctly.
3) Check that the slave addresses are the same at the 32DP-IF and in the DP-master configuration. If the slave addresses are not the same in the 32DP-IF and in the DP-master, change these addresses to match in both modules.
4) Check that the parameters of 32DP-IF are set correctly in the DP-master.
   If the parameters of the 32DP-IF are not set correctly in the DP-master, communication over the Profibus-DP network may be affected.
5) Check whether the network wiring and/or the cables for the extension blocks/units are properly connected to the 32DP-IF.
6) Check that the system configuration rules have not been exceeded, i.e. the number of special function blocks does not exceed 8 and control I/O of 32DP-IF is 256 or less.
7) Put RUN/STOP switch on the 32DP-IF into RUN.

8.2 Check the Status of the LEDs for the 32DP-IF

If the 32DP-IF does not seem to operate normally, check the following items.

1) Check the status of the “POWER LED”.

Table 8.1: POWER LED Check

Status	Description
Lit	Power source is OK.
Otherwise	Possible AC power failure, check AC power line and power source.

2) Check the status of the “RUN LED”

Table 8.2: RUN LED Check

Status	Description
Lit	The 32DP-IF will exchange data with extension units/blocks and special function blocks.
Otherwise	The 32DP-IF will exchange only input data with extension units/blocks. Check position of the RUN/STOP switch. If the switch is in the STOP position, change to RUN. If this switch is RUN position, check power supply for special function blocks and extension I/O units/blocks.

3) Check the status of the “BF LED”

Table 8.3: BF LED Check

Status	Description
Unlit	32DP-IF will exchange data with Profibus-DP network.
Otherwise	Check D8024. If D8024 does not show a stable baud rate (i.e. always changing) then check DP-network cables. Check M8004. If M8004 is ON, refer to Table 8.6.

4) Check the status of the “DIA LED”

Table 8.4: DIA LED Check

Status	Description
Unlit	Diagnostic data is not detected.
Otherwise	Check status of M8004, and DP-master setting. If M8004 is ON, refer to Table 8.6.

8.3 Check Error Status of the 32DP-IF

8.3.1 Error Status in D8029

Table 8.5: Error Status in D8029

Bit No.	Description	0 (OFF)	1 (ON)
Bit 0	general error	No general error	This bit is ON if one or more error bits (bit 2, 6, 7) are ON. Check bit 2, 6 and 7 in D8029.
Bit 1	Reserved		
Bit 2	Power fail	Power supply is normal	Power supply failure
Bit 3 ~ 5	Reserved		
Bit 6	I/O bus error	No I/O bus error	I/O bus error occurred. Check extension bus cable of I/O extension units/blocks and error code in D8060.
Bit 7	Operation error	No operation error	Operation error occurred. Check extension bus cable of special function blocks, and DP-master parameter, and error code in D8067 and D8068.
Bit 8, 9	Reserved		
Bit 10	configuration error	Configuration data valid	Invalid configuration data received. Check configuration of 32DP-IF in the DP-master and D8040 ~ D8055.
Bit 11	Parameter error	Parameter data valid	Invalid parameter data received. Check parameter of 32DP-IF in the DP-master and D200 ~ D299, and error code in D8064and D8068.
Bit 12 ~ 14	Reserved		
Bit 15	RUN/STOP status	RUN/STOP switch is in RUN position	RUN/STOP switch is in STOP position

8.3.2 Error Flags

Table 8.6: Error Flags

Diagnostic Device	Name	Check Points
M8004 (ref. D8004)	Error occurrence	ON when one or more error flags (M8060 to M8068) is ON. If this bit is ON, error number is written in D8004.
M8060 (ref. D8060, D8061)	I/O configuration error	If this flag is ON, check error code in D8060, D8061 and extension cable.
M8061 (ref. D8060, D8061)	32DP-IF hardware error	If this bit is ON, check error code in D8061.
M8062 (ref. D8062)	PC/HPP communication error	If this bit is ON, check error code in D8062.
M8064 (ref. D8064	Parameter error	If this flag is ON, check error code inD8064 and DP-master setting.
M8067 (ref. D8067)	Operation error	If this flag is ON, check error code in D8067 and D8068, DP-master parameter, and the extension cable.
M8068 (ref. D8068)	Parameter error and operation error	If M8064 or M8067 is ON, this bit would be set to ON. This bit is cleared by resetting the power supply.

8.3.3 Error Code

Diagnostic Device	Name	Error code	Description
D8004	Error number M☆☆☆☆	The contents of this register ☆☆☆☆ identifies which error flag is active, i.e. if ☆☆☆☆ = 8061, identifies M8061.	
D8060	I/O configuration error	This device contains the lowest device address that caused the error. Check D8061	
D8061	32DP-IF hardware error	0	Not error
		6102	Operation circuit error: Please contact a service representative.
		6103	I/O bus error: Check extension cable for Extension I/O units/blocks.
		6129	BFM #29 (error status) of a connected special function block shows a value that is different from “0”. Please check the diagnosis message at the DP-master.
D8062	PC/HPP communication error	0	Not error
		6201	Parity/ overrun/ framing error
		6202	Communications character error
		6203	Communication data sum check error
		6204	Data format error
		6205	Command error
D8064	Parameter error	0	Not error
		6406	Parameter error for extension units/blocks: Check error code in D8068, and parameter in the DP-master.
		6407	Parameter length error: Parameter data too long, check parameter’s length in the DP-master.
D8067	Operation error	0	Not error
		6407	Operation error: Operation error for transmitting special function block is occurred, check error code in D8068, and DP-master parameter, and extension cable.
D8068	Parameter error and operation error	This device contains the lowest special function block’s address that caused the error. Check D8064 and D8067.	

Appendix A: Default Parameter <After Power ON>

A-1 User Parameter <After Power ON>

Figure A-1:User Parameter <After Power ON>

	User Parameter for 32DP-IF			
Byte No.	**0**	**1**		
		Bit 0	**Bit 1**	**Bit 2**
Meaning	Reserved (must be 0)	Swap data flag	I/O block status is checked in every cycle: Y/N	Special function block's BFM #29 (Error status) is checked: Y/N.
Description		Default setting is OFF (0), byte data are not swapped within a word.	Default setting is OFF (0), the status check of the I/O units/blocks is not performed in every cycle.	Default setting is OFF (0), BFM #29 of all connected special function blocks is not checked in every cycle.

	User Parameter for First Special Function Block			
Byte No.	**3**	**4**	**5**	**6**
Meaning	Type code of special function block, lower byte of BFM 30 *1	Type code of special function block, higher byte of BFM 30 *1	Total length m of parameter data for this special function block.	Contains n = 0, as BFM addresses will be assigned dynamically *3
Description			m = 2 *2	

	.....	User Parameter for Last (y *4 th) Special Function Block		
Byte No.	.....	**2 + 4 × (y *4 - 1) + 1**	....	**2 + 4 × y *4**
Meaning	.....	Type code of special function block, lower byte of BFM 30 *1	.....	Contains n = 0, as BFM addresses will be assigned dynamically *3
Description				

*1 Type code of special function block is as following table. This code in the parameter must be written first Lower byte and second higher byte

Table A-1: Type Code of Special Function Blocks

Type	BFM 30 Code Dec	BFM30 Code Hex
FX2N-4AD	K2010	07DA Hex
FX2N-4AD-TC	K2030	07EE Hex
FX2N-4AD-PT	K2040	07F8 Hex
FX2N-4DA	K3020	0BCC Hex

*2 After power on, the default setting of this parameter for every special function block is 2.

*3 After power on, the default setting of this parameter is 0, as the BFM addresses for reading/writing command are not coded in the parameter data, but are sent together with the Profibus data. For exchanged data, refer to appendix A-2.

*4 “y” is number of connected special function blocks to 32DP-IF. (y = 1 8)

A-2 Exchanged Data by Default Parameter

After power on, the bus node does not know about the I/O features of the connected special function blocks. So each special function block is assigned to one reading command and one writing command. The exchanged data is as follows:

Table A-2: Exchanged Parameter Data

Times	Output area (send)	Input area (receive)
1st	Special function block’s BFM address is written for input data (Reading from 32DP-IF) (Bit15 = write flag)	This value is BFM’s data read from special function block.
2nd	This data is written to special function block’s BFM for output data.	This value was written to special function block’s BFM. (Written value is read back)
3rd	Special function block’s BFM address is written for output data (writing to 32DP-IF) (Bit15 = write flag)	This value was special function block’s BFM address. (Written value is read back)

Example

Reading BFM #17 and writing K1000 to BFM #9 in the special function block.

Table A-3: Example Exchanged Parameter Data

Times	Output Data	Input Data
1st	8011hex = 11hex (17 dez = BFM #17) + 8000 hex (bit15=1)	nnnn = hex value of BFM #17
2nd	03E8 hex = (1000 dez)	03E8 hex = hex value of BFM #9
3rd	8009 hex = 09 hex (9 dez = BFM #9) + 8000 hex (bit15=1)	8009 hex = verification of BFM address

Appendix B: Example Setting User Parameters

For user parameters, refer to chapter 6.

B-1 Example Configuration User Parameters

B-1-1 Example Setting for FX_{2N}-4AD

For BFM's definition, refer to FX_{2N}-4AD User's Manual.

Table B-1: User Parameter FX_{2N}-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX_{2N}-4AD)	BFM #30 lower byte: "DA H"	D201	07DA H	Lower
3	07 H		BFM #30 higher byte: "07 H"			Higher
4	09 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	80 H		Example: If BFM #0 is set to "1100 H". Ch 1: Voltage input mode Ch 2: Voltage input mode Ch 3: Current input mode (4~20 mA) Ch 4: Current input mode (4~20 mA)	D205	0080 H	Lower
11	00 H		BFM #0 lower byte = "00 H" (ch 1, ch 2)			Higher
12	00 H		BFM #0 higher byte = "11 H" (ch 3, ch 4)	D206	0011 H	Lower
-		-	-			Higher

B-1-2 Example Setting for FX2N-4DA

For BFM's definition, refer to FX2N-4DA User's Manual.

Table B-2: User Parameter For FX2N-4DA

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	CC H	User parameter for special function block (FX2N-4DA)	BFM #30 lower byte: "CC H"	D201	0BCC H	Lower
3	0B H		BFM #30 higher byte: "0B H"			Higher
4	09 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #1 ~ #4).			Higher
6	01 H		Specified exchange, ex. BFM #1	D203	0201 H	Lower
7	02 H		Specified exchange, ex. BFM #2			Higher
8	03 H		Specified exchange, ex. BFM #3	D204	0403 H	Lower
9	04 H		Specified exchange, ex. BFM #4			Higher
10	80 H		Example: If BFM #0 is set to "0000 H". Ch 1: Voltage output mode Ch 2: Voltage output mode Ch 3: Voltage output mode Ch 4: Voltage output mode	D205	0080 H	Lower
11	00 H		BFM #0 lower byte = "00 H" (ch 1, ch 2)			Higher
12	00 H		BFM #0 higher byte = "00 H" (ch 3, ch 4)	D206	0000 H	Lower
-		-	-			Higher

B-1-3 Example Setting for FX2N-4AD-PT

For BFM's definition, refer to FX2N-4AD-PT User's Manual.

Table B-3: User Parameter for FX2N-4AD-PT

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	F8 H	User parameter for special function block (FX2N-4AD-PT)	BFM #30 lower byte: "F8 H"	D201	07F8 H	Lower
3	07 H		BFM #30 higher byte: "07 H"			Higher
4	06 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 9).	D202	0406 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher

B-1-4 Example Setting for FX2N-4AD-TC

For BFM's definition, refer to FX2N-4AD-TC User's Manual.

Table B-4: User Parameter for FX2N-4AD-TC

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	EE H	User parameter for special function block (FX2N-4AD-TC)	BFM #30 lower byte: "EE H"	D201	07EE H	Lower
3	07 H		BFM #30 higher byte: "07 H"			Higher
4	09 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	80 H		Example: If BFM #0 is set to "1100 H". Ch 1: K type Ch 2: K type Ch 3: J type Ch 4: J type	D205	009C H	Lower
11	00 H		BFM #0 lower byte = "00 H" (ch 1, ch 2)			Higher
12	00 H		BFM #0 higher byte = "11 H" (ch 3, ch 4)	D206	0000 H	Lower
10	9C H		Example: If BFM #28 is set to "0000 H", all digital range error flags are reset. Bit 0 ~ bit 7 for digital range error flags are all OFF (0)) in the BFM #28.	D205	009C H	Lower
11	00 H		BFM #0 lower byte = "00 H"			Higher
12	00 H		BFM #0 higher byte = "00 H"	D206	0000 H	Lower
-		-	-			Higher

B-2 Setting the Number of Average for Leveled Input Data

The user parameter settings are as shown in FX2N-4AD example. For FX2N-4AD-PT and FX2N-4AD-TC, the settings must correspond to their respective BFM locations. For definitions of the BFM's, refer to each modules user's manual.

Table B-5: Setting number of average for leveled input data of FX2N-4AD.

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher /Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte "DA H"	D201	07DA H	Lower
3	07 H		BFM #30 higher byte "07 H"			Higher
4	12 H		Total length of parameter bytes for this special function block is 18 bytes (byte No. 4 ~ 21).	D202	0412 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	05 H		Specified exchange, ex. BFM #5	D203	0605 H	Lower
7	06 H		Specified exchange, ex. BFM #6			Higher
8	07 H		Specified exchange, ex. BFM #7	D204	0807 H	Lower
9	08 H		Specified exchange, ex. BFM #8			Higher
10	81 H		Example: If BFM #1 is set to "000A H". Ch 1's number of average: 10 times	D205	0A81 H	Lower
11	0A H		BFM #1 lower byte = "0A H"			Higher
12	00 H		BFM #1 higher byte = "00 H"	D206	8200 H	Lower
13	82 H		Example: If BFM #2 is set to "0005 H". Ch 2's number of average: 5 times			Higher
14	05 H		BFM #2 lower byte = "05 H"	D207	0005 H	Lower
15	00 H		BFM #2 higher byte = "00 H"			Higher
16	83 H		Example: If BFM #3 is set to "000C H". Ch 1's number of average: 12 times	D208	0C83 H	Lower
17	0C H		BFM #3 lower byte = "0C H"			Higher
18	00 H		BFM #3 higher byte = "00 H"	D209	8400 H	Lower
19	84 H		Example: If BFM #4 is set to "0014 H". Ch 1's number of average: 20 times			Higher
20	14 H		BFM #4 lower byte = "14 H"	D210	0014 H	Lower
21	00 H		BFM #4 higher byte = "00 H"			Higher

B-3 Adjusting Offset and Gain

The user parameter settings are as shown in FX2N-4AD example. For FX2N-4DA, the settings must correspond to their respective BFM locations. For definitions of the BFM's, refer to each modules user's manual.

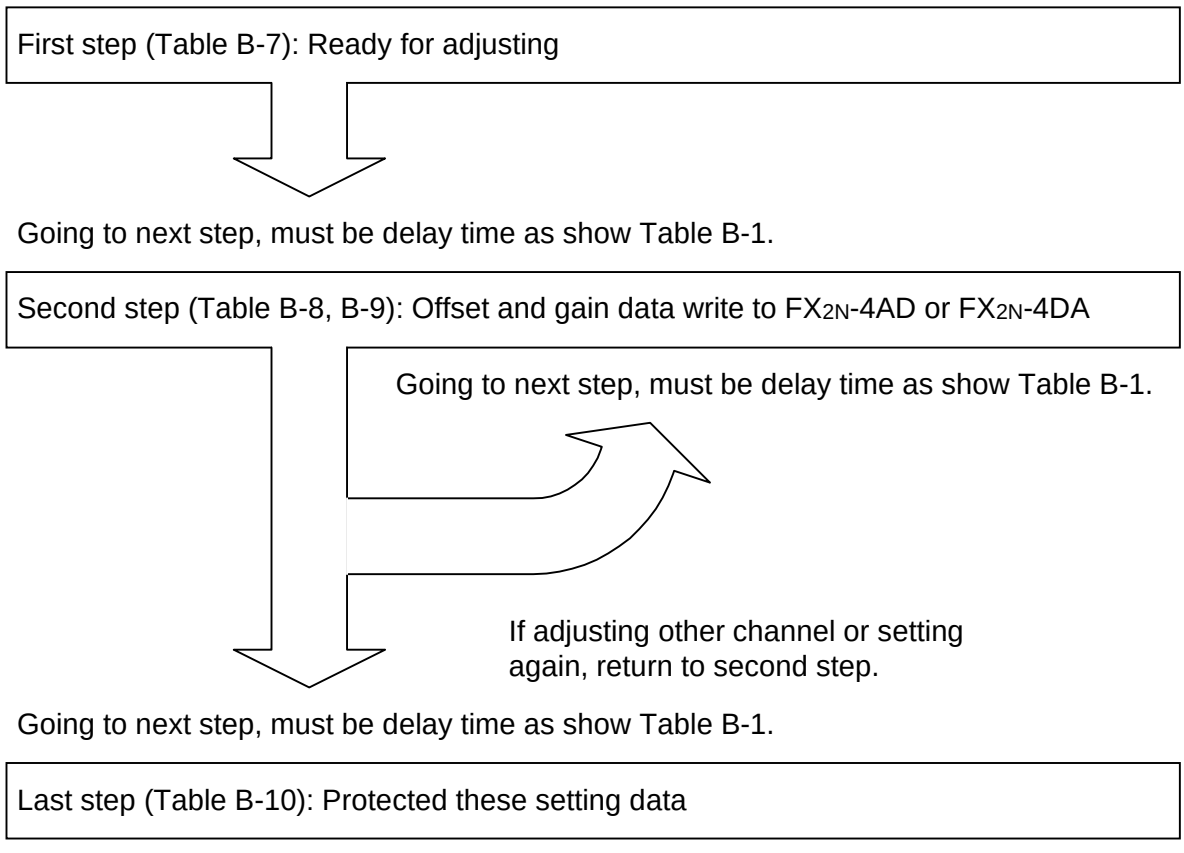
Note:

To adjust offset/gain, follow process in Figure B-1.
Going to next step, must be delay times as follows.

Table B-6:Delay Times

Items	Delay Times
FX2N-4AD	300 ms
FX2N-4DA	3 s

Figure B-1:Process for Adjusting Offset/Gain



1) First step in adjusting offset/gain

Table B-7: First Step in Adjusting Offset/Gain for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	AD H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte: “AD H”	D201	07DA H	Lower
3	07 H		BFM #30 higher byte: “07 H”			Higher
4	0F H		Total length of parameter bytes for this special function block is 15 bytes (byte No. 4 ~ 18).	D202	040F H	Lower
5	04 H		Example: Number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	80 H		Example: If BFM #0 is set to “1100 H”. Ch 1: Voltage input mode Ch 2: Voltage input mode Ch 3: Current input mode (4~20 mA) Ch 4: Current input mode (4~20 mA)	D205	0080 H	Lower
11	00 H		BFM #0 lower byte = “00 H” (ch 1, ch 2)			Higher
12	00 H		BFM #0 higher byte = “11 H” (ch 3, ch 4)	D206	0011 H	Lower
13	H95		Example: When Adjusting offset/gain, BFM #21 is set to “0001 H” for adjust permit.			Higher
14	H01		BFM #21 lower byte: “01 H”	D207	H0195	Lower
15	H00		BFM #21 higher byte: “00 H”			Higher
16	H96		Example: Before setting offset/gain define BFM #22 as “0000 H” for “setting ready”.	D208	9600 H	Lower
17	H00		BFM #22 lower byte: “00 H”			Higher
18	H00		BFM #22 higher byte: “00 H”	D209	0000 H	Lower
-		-	-			Higher

2) Second step in adjusting offset/gain

a) Second step in adjusting offset/gain for FX2N-4AD

Table B-8: Second Step in Adjusting Offset/Gain for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte “DA H”	D201	07DA H	Lower
3	07 H		BFM #30 higher byte “07 H”			Higher
4	0F H		Total length of parameter bytes for this special function block is 15 bytes (byte No. 4 ~ 18).	D202	040F H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	97 H		Example: If offset data is set to “0 V”, BFM #23 is set to “0000 H”.	D205	H0097	Lower
11	00 H		BFM #23 lower byte: “00 H”			Higher
12	00 H		BFM #23 higher byte: “00 H”	D206	9800 H	Lower
13	98 H		Example: If gain data is set to “7 V”, BFM #24 is set to “1B58 H”			Higher
14	58 H		BFM #23 lower byte: “58 H”	D207	1B58 H	Lower
15	1B H		BFM #23 higher byte: “1B H”			Higher
16	96 H		Example: If adjusting ch 1, BFM #22 is set to “0003 H”	D208	0396 H	Lower
17	03 H		BFM #22 lower byte: “03 H”			Higher
18	00 H		BFM #22 higher byte: “00 H”	D209	0000 H	Lower
-		-	-			Higher

b) Second step in adjusting offset/gain for FX2N-4DA

Table B-9: Second Step in Adjusting Offset/Gain for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	CC H	User parameter for special function block (FX2N-4DA)	BFM #30 higher byte: “CC H”	D201	0BCC H	Lower
3	0B H		BFM #30 higher byte: “0B H”			Higher
4	09 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #1 ~ #4).			Higher
6	01 H		Specified exchange, ex. BFM #1	D203	0201 H	Lower
7	02 H		Specified exchange, ex. BFM #2			Higher
8	03 H		Specified exchange, ex. BFM #3	D204	0403 H	Lower
9	04 H		Specified exchange, ex. BFM #4			Higher
10	8A H		Example: If offset data of ch 1 is set to “4”mAV, BFM #10 is set to “0FA0 H”.	D205	A08A H	Lower
11	A0 H		BFM #10 lower byte: “A0 H”			Higher
12	0F H		BFM #10 higher byte: “0F H”	D206	8B00 H	Lower
13	8B H		Example: If gain data of ch1 is set to “10 mA”, BFM #11 is set to “2710 H”			Higher
14	10 H		BFM #11lower byte: “10 H”	D207	2710 H	Lower
15	27 H		BFM #11 higher byte: “27 H”			Higher
16	8C H		Example: If offset data is set to “0 V”, BFM #12 is set to “0000 H”.	D205	008C H	Lower
17	00 H		BFM #11 lower byte: “00 H”			Higher
18	00 H		BFM #11 higher byte: “00 H”	D206	8D00 H	Lower
19	8D H		Example: If gain data is set to “2.5 V”, BFM #13 is set to “09C4 H”			Higher
20	C4 H		BFM #23 lower byte: “C4 H”	D207	09C4 H	Lower
21	09 H		BFM #23 higher byte: “09 H”			Higher
22	88 H		Example: If adjusting ch 1 and ch2, BFM #8 is set to “1111 H”	D208	1188 H	Lower
23	11 H		BFM #8 lower byte: “11 H”			Higher
24	11 H		BFM #8 higher byte: “11 H”	D209	0011 H	Lower
-		-	-			Higher

3) Last step for adjusting offset/gain

Table B-10:Last Step for Adjusting Offset/Gain for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte	D201	07DA H	Lower
3	07 H		BFM #30 higher byte			Higher
4	09 H		Total length of parameter bytes for this special function block is 18 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	H95		Example: When adjust offset/gain adjust is complete set BFM #21 to “0002 H” for “adjust forbid”.	D205	H0295	Lower
11	H02		BFM #21 lower byte: “02 H”			Higher
12	H00		BFM #21 higher byte: “00 H”	D206	0000 H	Lower
-		-	-			Higher

B-4 Changing the High Speed Mode/Normal Mode

The user parameter settings are as shown in FX2N-4AD example. For FX2N-4DA, the settings must correspond to their respective BFM locations. For definitions of the BFM's, refer to each modules user's manual.

Table B-11:Changing the High Speed Mode/Normal Mode for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte	D201	07DA H	Lower
3	07 H		BFM #30 higher byte			Higher
4	09 H		Total length of parameter bytes for this special function block is 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	8F H		Example: Using high speed mode, BFM #15 is set to "0001 H".	D205	018F H	Lower
11	01 H		BFM #15 lower byte: "01 H"			Higher
12	00 H		BFM #15 higher byte: "00 H"	D206	0000 H	Lower
-		-	-			Higher

B-5 Returning to Default Settings

The example of setting the user parameter is the one of FX2N-4AD. For FX2N-4DA, the settings must correspond to their respective BFM locations. For the meaning of BFM, refer to each user's manual

1) First step of returning to default for FX2N-4AD

Table B-12:First Step of Returning to Default Settings for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte	D201	07DA H	Lower
3	07 H		BFM #30 higher byte			Higher
4	09 H		Total length of parameter bytes for this special function block are 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	H94		Returning to default settings, BFM #20 is set to "0001 H".	D205	0194 H	Lower
11	H01		BFM #21 lower byte: "01 H"			Higher
12	H00		BFM #21 higher byte: "00 H"	D206	0000 H	Lower
-		-	-			Higher

2) Step 2 of returning to default for FX2N-4AD

Table B-13:Step 2 of Returning to Default Settings for FX2N-4AD

Using GSD File		User Parameter Type	Description	Using Programming Tool		
Byte No.	Setting Value (Hex)			Register No.	Setting Value (Hex)	Higher/ Lower Byte
0	00 H	User parameter for 32DP-IF	See section 6.1.	D200	0000 H	Lower
1	00 H					Higher
2	DA H	User parameter for special function block (FX2N-4AD)	BFM #30 lower byte	D201	07DA H	Lower
3	07 H		BFM #30 higher byte			Higher
4	09 H		Total length of parameter bytes for this special function block are 9 bytes (byte No. 4 ~ 12).	D202	0409 H	Lower
5	04 H		Example: number of BFM for data exchanged every cycle is 4 BFMs (BFM #9 ~ #12).			Higher
6	09 H		Specified exchange, ex. BFM #9	D203	0A09 H	Lower
7	0A H		Specified exchange, ex. BFM #10			Higher
8	0B H		Specified exchange, ex. BFM #11	D204	0C0B H	Lower
9	0C H		Specified exchange, ex. BFM #12			Higher
10	H94		Must be returned to “0000 H” in BFM #20.	D205	0094 H	Lower
11	H00		BFM #21 lower byte: “00 H”			Higher
12	H00		BFM #21 higher byte: “00 H”	D206	0000 H	Lower
-		-	-			Higher

USER'S MANUAL

FX2N-32DP-IF PROFIBUS-DP INTERFACE UNIT

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